YUMA International Airport

Chapter Four
DEVELOPMENT ALTERNATIVES

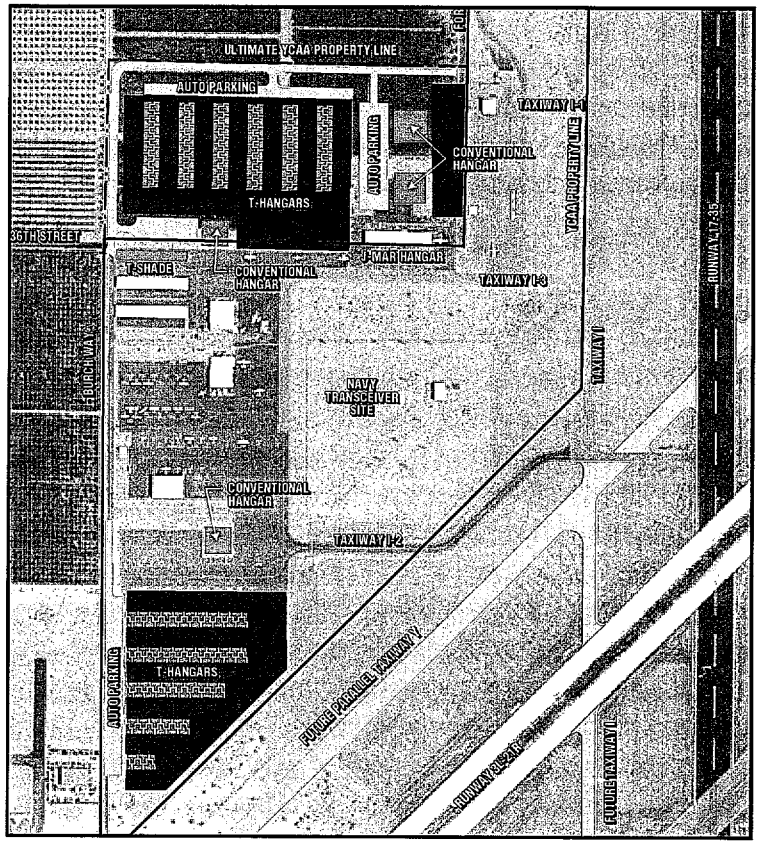
YUMA International Airport

DEVELOPMENT ALTERNATIVES

In the previous chapter, airside and landside facility needs that would satisfy projected demand over the planning period were identified. The next step in the master planning process is to evaluate the various ways these facilities can be provided. In this chapter, these facility needs will be applied to a series of airport development alternatives. The possible combinations of alternatives can be endless, so some intuitive judgement must be applied to identify those alternatives which have the greatest potential for implementation. The alternatives analysis is an important step in the planning process since it provides the underlying rationale for the final master plan recommendations.

The development alternatives for the airport can be categorized into two functional areas: the airside (runways, taxiways) and landside (terminal building, aircraft storage facilities, aircraft parking apron). Within each of these functional areas, specific facilities are required or desired. Although each functional area is treated separately, each area interrelates to each other and affect the development potential of the other. Therefore, these areas must be examined both individually and collectively to ensure a final plan that is functional, efficient, cost effective, and minimizes environmental impacts. Through this process, a basic airport concept is developed into a realistic development plan.

While any evaluation of alternatives can also include a "no action" alternative, this would effectively reduce the quality of services being provided to the general public, and potentially affect the area's ability to accrue additional economic



growth. The airport's aviation forecast and the analysis of facility requirements indicate both a current and future need for the development of additional taxiways, improvement of navigational aids and lighting, and aircraft storage facilities. Without these facilities, regular users of the airport will be constrained from taking maximum advantage of the airport's air transportation capabilities.

Although this study will not consider the relocation of services to another airport, it is always a potential alternative. While there are two public-use airports located within a 30 nautical mile radius of the airport, they are not as convenient and will not enhance community development in the region. Furthermore, the continuing growth expected by the major employers in the area that use the airport's facilities demonstrate the important role that an airport plays, a role that is not easily replaced by another existing airport in the system without tremendous expense. Therefore, the master planning process must attempt to deal with the facility needs which have been identified in the previous chapter, at the levels forecast throughout the twenty-year planning period.

PREVIOUS MASTER PLAN

The previous Master Plan for Yuma International Airport was completed in 1992. A primary focus of the Master Plan was the replacement of the air carrier passenger terminal building. The 1992 Master Plan provided initial analysis for the location of the air carrier terminal building and sizing. Subsequent terminal design and engineering studies finalized plans for the development of the new terminal building and automobile parking areas, which are currently under construction. The 1992 Master Plan also examined expansion of air cargo and general aviation areas. The development of the air cargo apron and an expansion of the west general aviation apron were completed during the preparation of the last Master Plan. In addition, a second T-shade hangar and aircraft wash facility have also been built in the west general aviation area since the completion of the last Master Plan. While there has been no additional development along the air cargo apron, the YCAA has continued to market Yuma International Airport to air cargo airlines and freight forwarders.

INITIAL DEVELOPMENT CONSIDERATIONS

Exhibit 4A summarizes the major development considerations for the airport which will be used in the alternative's analysis to follow. These were derived from the facility need's analysis (Chapter Three) and include Planning Advisory Committee (PAC) input. The items have been grouped by categories typically used in alternative evaluations. While many of these development considerations reflect projects or topics which are demand driven (the need for additional T-hangars), several are functional in nature (airfield lighting aids), but

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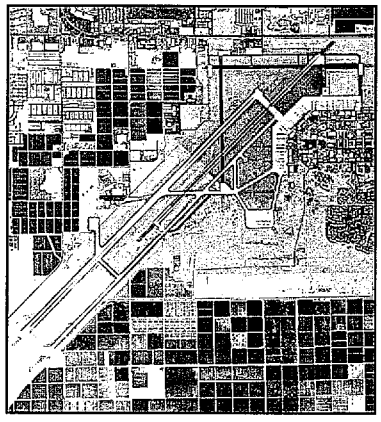
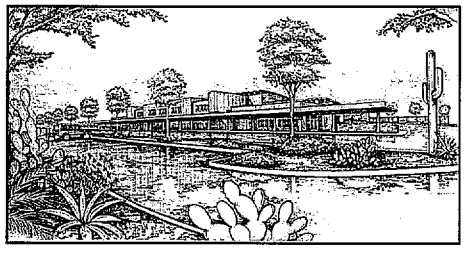
AIRFIELD CONSIDERATIONS

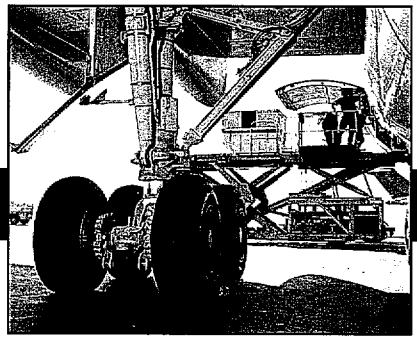
- Extend Taxiway I to Runway 35 end.
- Construct parallel taxiway and acute-angled exits along the north side of Runway 3L-21R.
- Install Visual Glideslope Indicator (VGSI) to Runways 8, 26, and 35.
- Install Runway End Identifier Lighting (REIL) to Runways 8, 26, and 35.
- Establish one-mile visibility minimum GPS approaches to Runways 8, 26, and 35.
- Establish one-half mile visibility minimum GPS approach to Runway 3L.
- Install MALSR to Runway 3L
- Investigate reclassification of Runways 17-35 and 8-26 from Class B to Class A.



TERMINAL CONSIDERATIONS



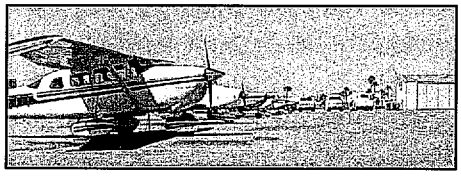
- Evaluate automobile parking alternatives.
- Evaluate potential international service.



AIR CARGO CONSIDERATIONS

- Evaluate building and apron development alternatives.

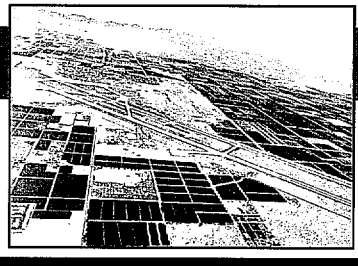
GENERAL AVIATION CONSIDERATIONS



- Provide for the relocation of general aviation facilities located near the terminal area.
- Provide for new areas for hangar development to meet projected needs.

AIRPORT PROPERTY CONSIDERATIONS

- Identify land areas for acquisition to provide for facility development and ensure long-term compatibility and protection.



YUMA International Airport

Exhibit 4A
ALTERNATIVE DEVELOPMENT CONSIDERATIONS

important considerations in the overall development of the airport and the master planning effort.

It is the overall objective of this effort to provide for a balanced airside and landside complex to serve forecast civilian aviation demands. However, prior to defining specific alternatives, development objectives should first be defined. The Yuma County Airport Authority (YCAA) provides the overall guidance for the operation and development of civil aviation facilities at Yuma International Airport. Therefore, it is of primary concern that the Airport is marketed, developed, and operated for the betterment of its users. With this in mind, the following objectives have been defined:

- Develop an attractive, efficient, and safe aviation facility.
- Promote increased use of the airport for transportation of air passengers while providing for increased commercial airline competition to stimulate growth.
- Promote increased use of the airport by both national and international air cargo carriers.
- Encourage increased general aviation use of the airport by promoting increased business and corporate use of the airport.
- Target local economic development through the development of YCAA property.

In attempting to meet these objectives, development of facilities should be undertaken in such a manner as to minimize operational constraints. Flexibility in airport development is essential to assure adequate capacity while minimizing financial commitments until market potential is realized.

AIRFIELD CONSIDERATIONS

In the previous chapter, an evaluation was undertaken of the adequacy of the existing runway lengths, width, and strength, since these needs frequently change as new aircraft are introduced into the mix of aircraft used by businesses or individuals. The assessment of the runway system indicated that the existing length, width, and strength of the runways are sufficient to serve the existing and future civilian aircraft fleet mix. Therefore, no additional runways or runway length is needed to serve the civilian fleet mix through the planning period. To safely and efficiently accommodate the civilian fleet mix at Yuma International Airport, the facility requirement's analysis did identify taxiway, airfield lighting, and navigational aid improvements. These improvements are as follows:

- **Extend Taxiway I to the Runway 35 end.** Presently, Taxiway I only extends to approximately the midpoint of Runway 17-35. To access the Runway 35 end, aircraft must back-taxi along the runway or

cross both parallel runways and follow Taxiways D, E, and M to the Runway 35 end. Extending Taxiway I to the Runway 35 end would enhance airfield safety by providing parallel taxiway access the full-length of Runway 17-35 and provide efficient and direct access between landside facilities and the Runway 35 end.

- **Construct parallel taxiway and acute-angled exits along the north side of Runway 3L-21R.** The need for this taxiway will be driven by the number of civilian aircraft operations and mix of aircraft using the parallel runway system. Presently, aircraft accessing the air cargo apron or Boeing aircraft certification area must cross Runway 3L-21R and follow Taxiway E to the desired runway end. This decreases airfield capacity as aircraft landing and departing Runway 3L-21R must be sequenced to allow these aircraft to cross the runway and increases taxi time and costs for civilian aircraft. A parallel taxiway would provide safe and efficient access to civilian facilities for large aircraft which cannot use Runways 17-35 or 8-26 due to insufficient length. Acute-angled exits serve to increase airfield capacity by enabling aircraft to exit the runway at higher speeds than required for right-angled exits, thus reducing runway occupancy time.

- **Establish GPS approaches to Runways 8, 26, 35, and 3L.** Presently, only Runways 17 and 21R have a published instrument approach procedures. Global Positioning System (GPS) approaches will enable aircraft to locate and land to any runway end during poor visibility and cloud ceiling situations.

- **Install REILs to Runways 8, 26, and 17 and VGSIs to Runways 8, 26, and 35.** The addition of runway end identifier lighting (REILs) and visual glideslope indicators (VGSIs) will improve instrument and visual approaches to the airport. REILs aid pilots in identifying the runway end at night and during poor visibility conditions. VGSIs aid pilots in determining the correct descent path to the runway.

- **Install a MALSR to Runway 3L.** Presently, Runway 21R, which is equipped with an instrument landing system (ILS), is also equipped with a medium intensity approach lighting system with runway alignment lighting (MALSR). Installing a MALSR to the Runway 3L end can provide for a GPS approach with one-half mile visibility minimums (similar to the existing ILS approach to Runway 21R).

- **Investigate reclassifying Runways 17-35 and 8-26 from Class B to Class A.** Class A and Class B refer to military runway classifications for use in determining proper military clear zone and airspace criteria for a runway. Runway classification is dependent upon the type of aircraft which use the runway. As outlined in NAVFAC P-80.3, *Facility Planning Factor*

Criteria for Navy and Marine Corps Shore Installations, Class A runway criteria is normally applied to runways used primarily by small, light aircraft which do not have the potential for development for use by heavier aircraft, or have an anticipated requirement for such use, are less than 8,000 feet in length, and are used by Class B aircraft less than 10 percent of the time. Class B criteria applies to all other runways.

Class A criteria is more representative of the type of aircraft presently using Runways 8-26 and 17-35. Presently, Runways 17-35 and 8-26 are used primarily by general aviation piston aircraft, air carrier turboprop aircraft, and military helicopter and C-12 turboprop aircraft. Occasionally, Runway 17-35 is used by AV-8B aircraft during periods of prevailing north/south wind conditions.

The proximity of the passenger terminal area and apron to Runway 8-26 has necessitated that the military grant waivers for the development of the passenger terminal building and aircraft operations along the terminal apron. In granting the waiver for the construction of the new terminal building on February 25, 1997, the Naval Air Systems Command in Arlington, Virginia recommended reclassifying Runway 8-26 as a Class A runway since runway 8-26 is only 6,146 feet long and does not meet the design criteria for a Class B runway as defined in NAVFAC P-80.3.

In a request to the Naval Air Systems Command on January 21, 1992 to reclassify Runway 17-35 as a Class A runway, the Commanding Officer of the MCAS-Yuma, noted that Class B aircraft use of Runway 17-35 over the preceding three and one-half years totaled less than 3.5 percent of total operations on Runway 17-35.

Reclassifying Runways 8-26 and 17-35 as Class A runways would eliminate the need for waivers and be more representative of the aircraft currently using these runways. Since these runways serve primarily civilian operations, the Yuma County Airport Authority (YCAA) may wish to explore the transfer of ownership of Runway 8-26, Runway 17-35, and associated parallel taxiways and connecting taxiways to Yuma County from MCAS-Yuma.

TERMINAL AREA ALTERNATIVES

The components of the terminal area include the terminal apron, gate positions, functional areas inside the building, and automobile parking for public, employees, and rental car companies. A new terminal building is currently under construction to replace the existing terminal building built in 1968. This new terminal facility will provide nearly 46,000 square feet of space for both passenger and airport administration functions. Concurrent with the construction of the new terminal building are access and

parking improvements. Once completed, there will be 223 long-term parking spaces, 92 short-term parking spaces, 142 rental car ready and return parking spaces, and 59 terminal employee parking spaces. Additionally, 23 parking spaces will be provided for the U.S. Customs and Federal Aviation Administration (FAA) offices, which are located in the terminal area.

The assessment of the terminal area in the previous chapter indicated that the new terminal building will provide sufficient area to serve expected passenger volumes throughout the planning period and well beyond; however, the existing automobile parking areas under construction will not be sufficient to serve the projected long term needs. By the end of the planning period, there is projected need for an additional 164 long-term parking spaces, 48 short term parking spaces, 18 rental car spaces, and 33 terminal employee spaces.

The airport has been served by international passenger service in the past. Therefore, it is prudent to consider potential international air service in long term terminal area planning.

Airports with international passenger service require space for the Federal inspection of arriving international passengers, aircraft, crew, baggage, and cargo. For security and inspection purposes, international passenger service requires a strict segregation of deplaning passengers and baggage from domestic passenger service. This requires segregated baggage claim, hold rooms, and arriving passenger gates. Additionally, space is required for federal agencies conducting passenger, aircraft, crew, baggage, and cargo inspections.

The new terminal building was not designed to accommodate international passenger service. Generally, a minimum of 10,000 square feet is needed to efficiently serve international passenger service and provide office and inspection areas for the Federal agencies normally involved with international passenger screening.

The existing terminal area is constrained by the location of Business Highway 8 to north and the military runway safety areas for Runway 17-35 (to the west), Runway 8-26 (to the south), and Runway 3L-21R (to the east). The runway safety constraints include the primary surface for each runway (which is to be kept clear of objects) and height restrictions over the entire terminal area.

Exhibit 4B depicts Terminal Alternative A which considers the long term parking and potential international terminal needs. In this alternative, existing general aviation facilities located west of the terminal building are relocated to west general aviation area to provide for the expansion of the terminal access loop road and development of a separate international terminal arrivals building.

Expanding the terminal access loop road, as depicted, provides approximately 280 additional parking spaces. Combining these potential spaces with existing long-term and short-term parking provides a total of 595 at-grade public parking spaces.

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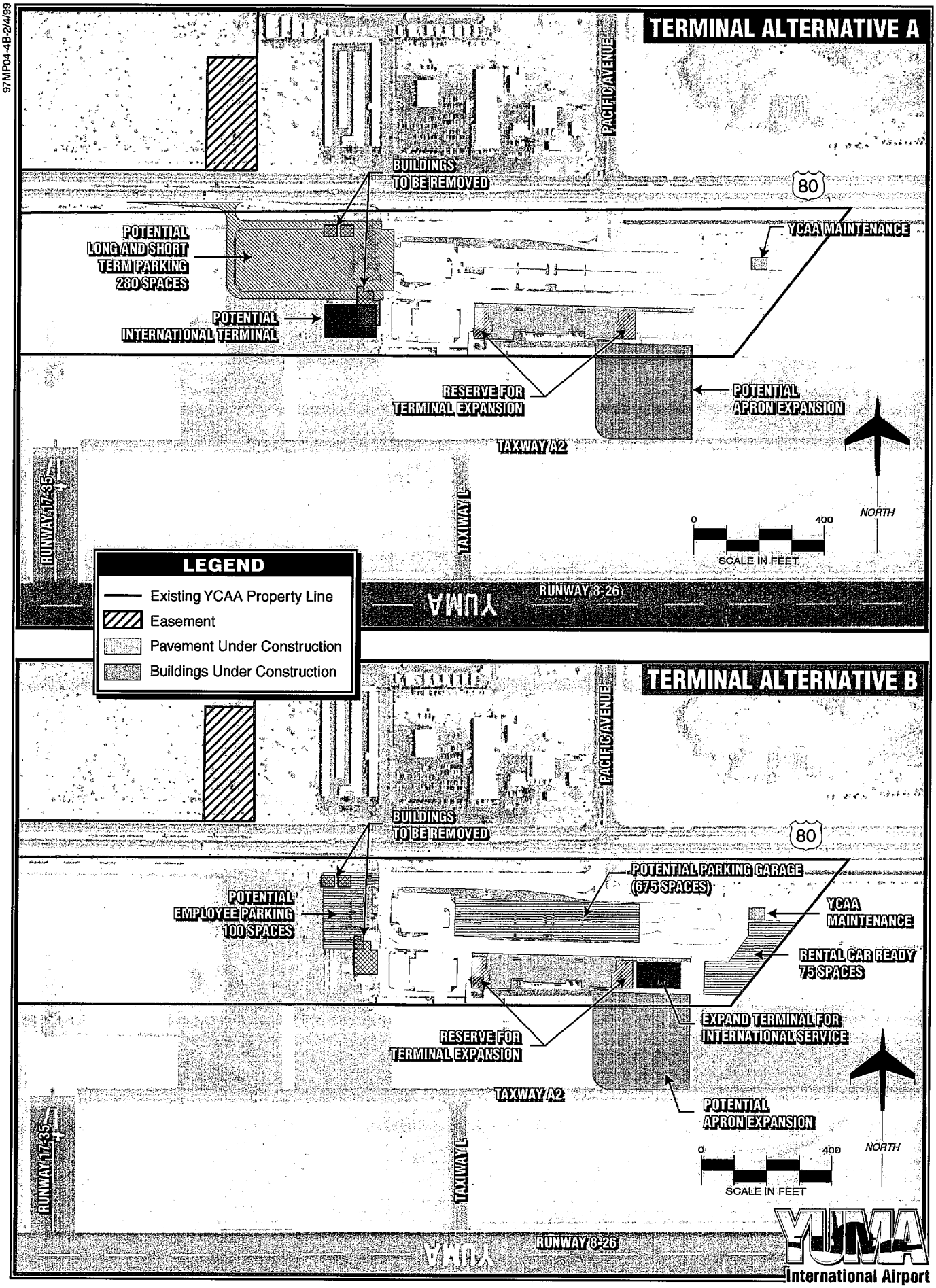

YUMA International Airport

Exhibit 4B
TERMINAL ALTERNATIVES

This total is sufficient to serve projected long and short-term public parking needs. The international terminal was located to maintain existing automobile parking areas next to the terminal building and provide sufficient apron area for aircraft movements.

Terminal employees would likely be required to use a remote parking lot under this alternative since public parking areas are expected to absorb all available areas for developing at-grade parking spaces. Rental car ready and return would follow a similar practice and utilize remote parking areas.

Advantages: Expanding the loop as depicted has the advantage of maintaining the single collection site located at the far east end of the lot. All projected long term public parking needs can be met on site. All international terminal functions are segregated from existing terminal building areas.

Disadvantages: Much of the expanded parking area would be located farther than 1,000 feet from the terminal building, the maximum walking distance generally considered in terminal parking design. A separate terminal, providing only international services, could be confusing to air travelers using Yuma International Airport. Employee and rental car parking would be located in remote lots.

Terminal Alternative B (**Exhibit 4B**) proposes to develop a parking garage (675 spaces) to accommodate projected automobile parking needs and expand the existing terminal building to accommodate international service. To accommodate terminal employee parking needs, existing general aviation facilities are proposed to be relocated to the west general aviation area, and a separate employee parking lot developed in this area. This area could also be expanded to serve as an overflow parking lot for the public. As shown, the existing rental car ready and terminal employee parking areas would be redeveloped to accommodate the displaced rental car ready spaces lost to terminal expansion. While not shown, the option would be to expand the building to the west to accommodate international services.

Advantages: Public parking areas would be conveniently located near the terminal building. All projected public, employee, and rental car parking needs could be met at the existing terminal site. Existing terminal services would be available to international travelers.

Disadvantages: Bag claim expansion (or ticketing if the terminal was expanded to the west to accommodate international passenger service) would be limited.

While not specifically detailed in the drawings, public and employee parking needs could be met through remote parking lots, located either on or off airport property. A consideration with remote parking is the cost associated with busing people to and from the terminal. This can be a significant expense and can lead to the congestion within the terminal area, especially along the terminal curb.

RECOMMENDED ALTERNATIVE

Exhibit 4C depicts the recommended terminal area development alternative. A combination of both at-grade parking and the development of a parking garage are recommended to accommodate long-term terminal parking needs. In this combination, all public, employee, and rental car parking needs can be met at the present terminal site. The lower level of the parking garage is recommended to serve rental car ready/return needs.

International air carrier passenger service is recommended to be accommodated in a separate building located west of the existing terminal building to ensure security and segregation from domestic passenger service. This also allows for the expansion and maximum utility of the new passenger terminal building for domestic passenger service needs since international service will not have to be accommodated in the new passenger terminal.

AIR CARGO ALTERNATIVES

Existing air cargo facilities include a 17,800 square yard apron and connecting taxiway located north of Runway 3L-21R. There are no cargo buildings located on the airport. However, the YCAA is negotiating with developers for the construction of a 50,000 square-foot cargo building near the existing cargo apron.

Presently, air cargo service consists of "feeder" type service to Phoenix Sky Harbor International Airport. All operators are currently located off airport and transfer freight directly from the aircraft to vehicles on the apron. The YCAA follows an aggressive marketing plan which promotes Yuma International Airport as an ideal location to serve the growing Latin America and Asian markets.

As detailed in the forecasts and facility requirements analysis, expansion of the existing regional service will likely involve narrow body jet aircraft such as the Boeing 727 or McDonnell-Douglas DC-9. International service will likely involve wide body jet aircraft such as the Boeing 747 and McDonnell-Douglas DC-10 and MD-11. Taking into consideration the types of aircraft likely to serve the airport, alternatives have been developed which examine options for the development of the full 80-acre site currently reserved for air cargo development. An expansion of the existing apron to the north is limited by the existing Boeing lease area. Therefore, the existing air cargo apron must first be expanded to the west before being expanded to the north.

Exhibit 4D depicts Cargo Alternative A which provides for the initial expansion of the existing air cargo apron to the west (toward 4th Avenue) and development of cargo buildings on the north and south sides of the apron. This area is dimensioned to accommodate the largest air cargo aircraft, Boeing 747 aircraft.

As shown, the apron can be expanded in a similar manner to the north to accommodate long term growth.

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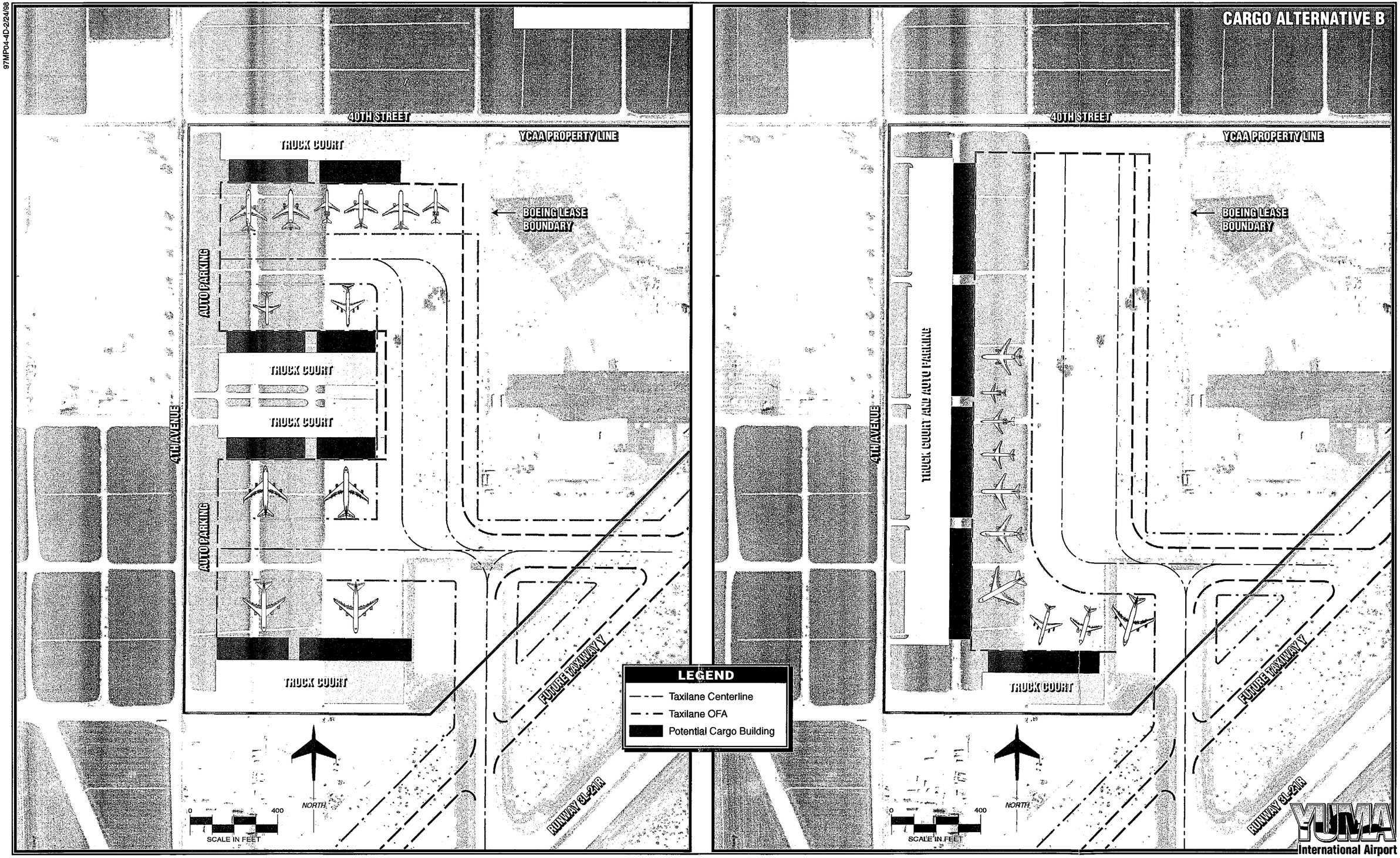
CARGO ALTERNATIVE B



YUMA International Airport

Exhibit 4D
AIR CARGO ALTERNATIVES

However, this expansion is limited by the location of 40th Avenue. To provide sufficient area behind each cargo building to accommodate a truck court, the northern portion of the apron cannot accommodate 747 cargo aircraft. Dual taxilane access is depicted to prevent congestion for aircraft accessing this portion of the cargo apron.

A new taxiway is depicted to provide access to and from the runway system and prevent congestion along Taxiway H, which can only provide single aircraft access to the air cargo apron.

Exhibit 4D also depicts Cargo Alternative B. Similar to Alternative A, the air cargo apron is initially expanded to the west (toward 4th Avenue) to avoid the Boeing lease site, then expanded to north, parallel with 4th Avenue. Cargo buildings are allowed to develop along the south and west sides of the apron. Similar to Alternative A, an alternate taxiway is proposed to provide access to and from the runway/taxiway system and dual taxilane access is considered in the apron development.

The primary disadvantage of Alternative A is that Boeing 747 aircraft can only be accommodated on the south apron area. Alternative B provides the advantage of being able to accommodate all types of air cargo aircraft at any position on the apron.

Expansion can be more easily phased with Alternative B when compared with Alternative A. To expand to the north in Alternative A, the entire north apron area and dual access taxilane must be constructed. In Alternative B, the apron can simply be expanded to the north as additional apron is needed.

Since any expansion of the existing cargo apron will likely involve an expansion to the north, the initial cargo building should be developed perpendicular to the existing air cargo apron. As shown on both exhibits, the placement of the initial cargo building should also consider the development of a truck court along the south side of the building.

RECOMMENDED AIR CARGO ALTERNATIVE

The recommended air cargo alternative is depicted on **Exhibit 4E** and closely follows Alternative A, with the exception that buildings in the center of the apron parallel 4th Avenue instead of lying perpendicular to 4th Avenue. In this manner, airfield access can be provided from the northern and southern portions of the apron to land west of 4th Avenue that the YCAA is considering purchasing. Additionally, the apron can be developed for 747 access throughout the entire apron area. As discussed previously, this was a limiting factor in the apron design on Alternative A.

GENERAL AVIATION ALTERNATIVES

Considerations relative to potential general aviation alternatives include:

- **Relocating general aviation facilities located in the terminal area.** Presently, two 1,500 square-

foot aircraft storage hangars, a 4,200 square-foot Fixed Based Operator (FBO) facility, and 27 tiedowns are located along the apron area west of the air carrier terminal building. Consistent with the previous Airport Master Plan and terminal planning studies, these facilities should be relocated and consolidated in the west general aviation area to provide for the expansion of terminal area facilities, including building and automobile parking facilities.

- **Additional storage hangars**. The facility need's evaluation projected the need for as many as 89 additional storage positions, for both small and large aircraft, through the planning period. Conventional (clear-span), T-hangar, and shade hangar positions must be considered.

The existing layout of the west general aviation area is depicted on the aerial photographs on **Exhibit 4F**. Identified on the exhibit is the 10.7-acre site leased to the Marine Corps for radio telemetry and communications transceivers. Redevelopment of the transceiver site was not considered since the lease for this site extends through the year 2020. A feasibility study prepared during the last Airport Master Plan recommended against relocating these facilities.

Since the completion of the previous Master Plan, the west general aviation apron was expanded to the south (to provide an area for the relocation of general aviation facilities located near the terminal area) and an additional shade hangar developed along the north side of the apron.

A potential layout for the west general aviation area, which considers the recommendations of the previous Master Plan, is depicted on General Aviation Alternative A on **Exhibit 4F** As shown, an area is available on the recently-expanded apron for the development of a large conventional hangar. An additional shade hangar could be developed north of the existing shade hangars; however, this hangar would be limited to access from the south only. Large conventional hangars and corporate aviation hangars could be developed south of the existing apron area. To accommodate long term general aviation needs, this layout provides for the acquisition of approximately 21 acres of land west of Fortuna Avenue. As shown, this area can provide for an additional large conventional hangar development area and 80 shade and T-hangar positions.

An alternative layout for the west general aviation area is also presented on **Exhibit 4F**. Similar to Alternative A, the available large conventional hangar and shade hangar development areas along the existing apron areas are shown for development. The area south of the existing apron area is developed with T-hangars and shade hangars. If developed as shown, this area can provide for as many as 70 additional hangar positions. To provide for additional large conventional hangar development areas, this alternative provides for the acquisition of approximately 13 acres of land west of Fortuna Avenue to accommodate an expansion of the existing apron area to the west and realignment of Fortuna Avenue to provide for the development

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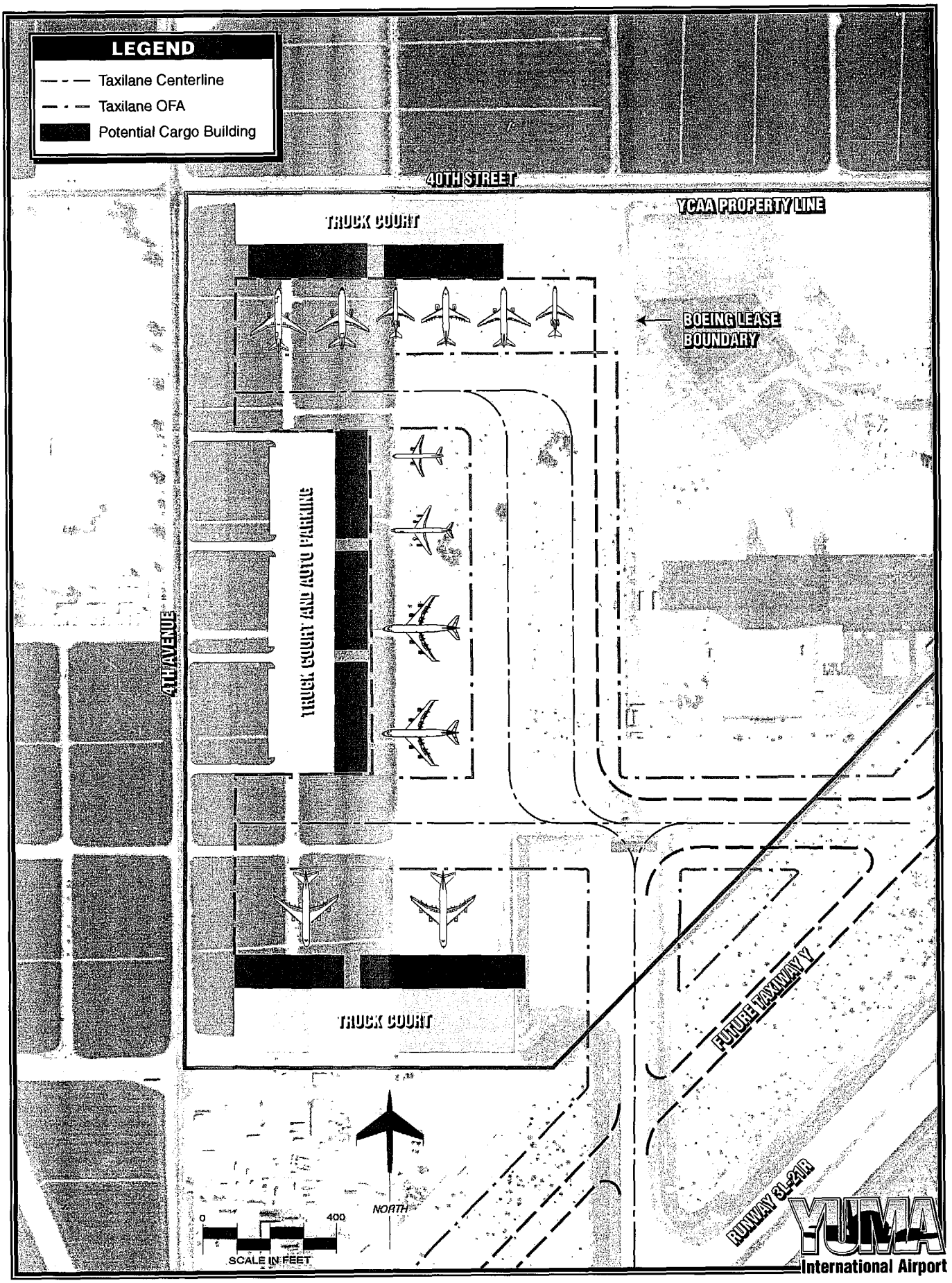

Exhibit 4E
RECOMMENDED
AIR CARGO ALTERNATIVE

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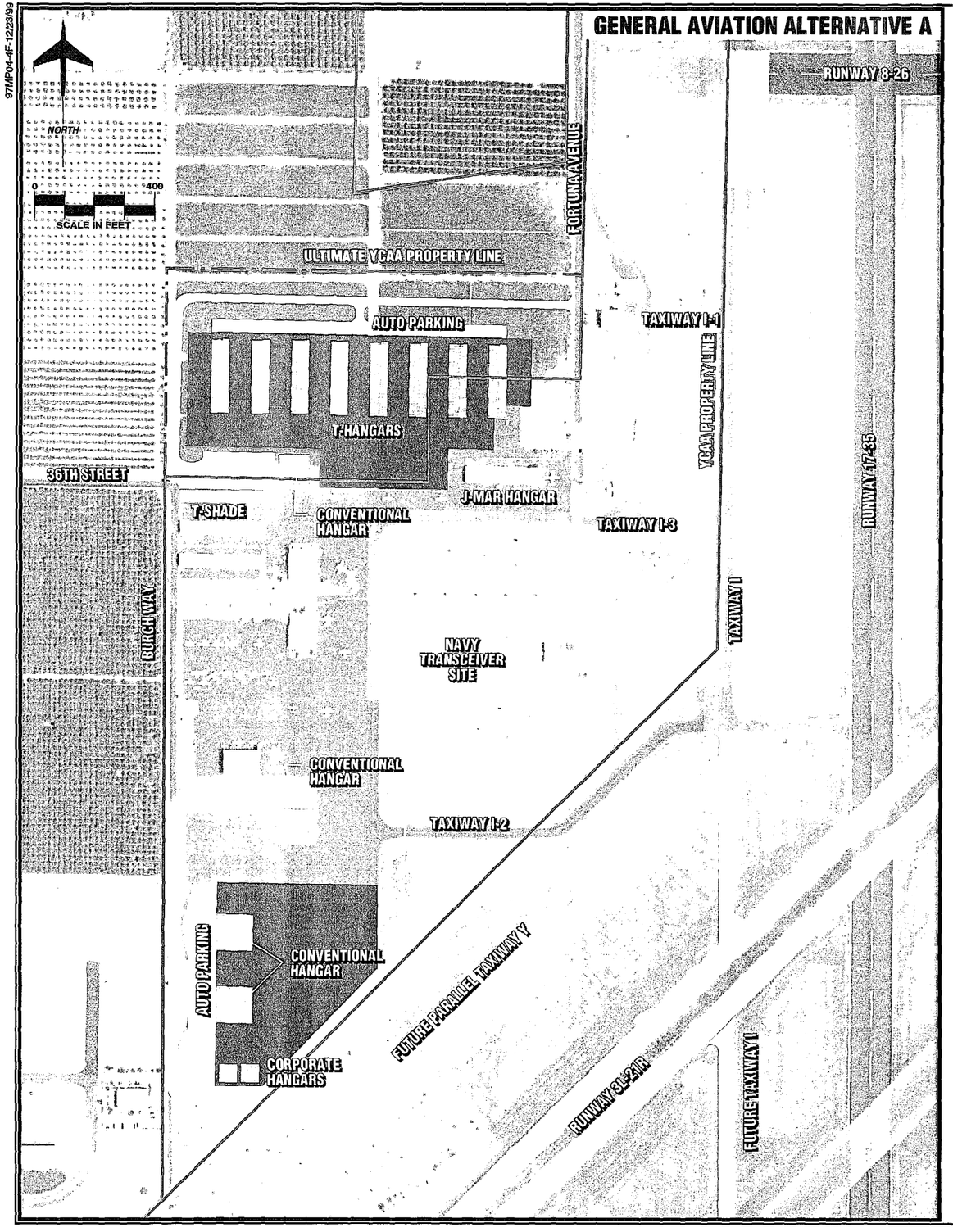
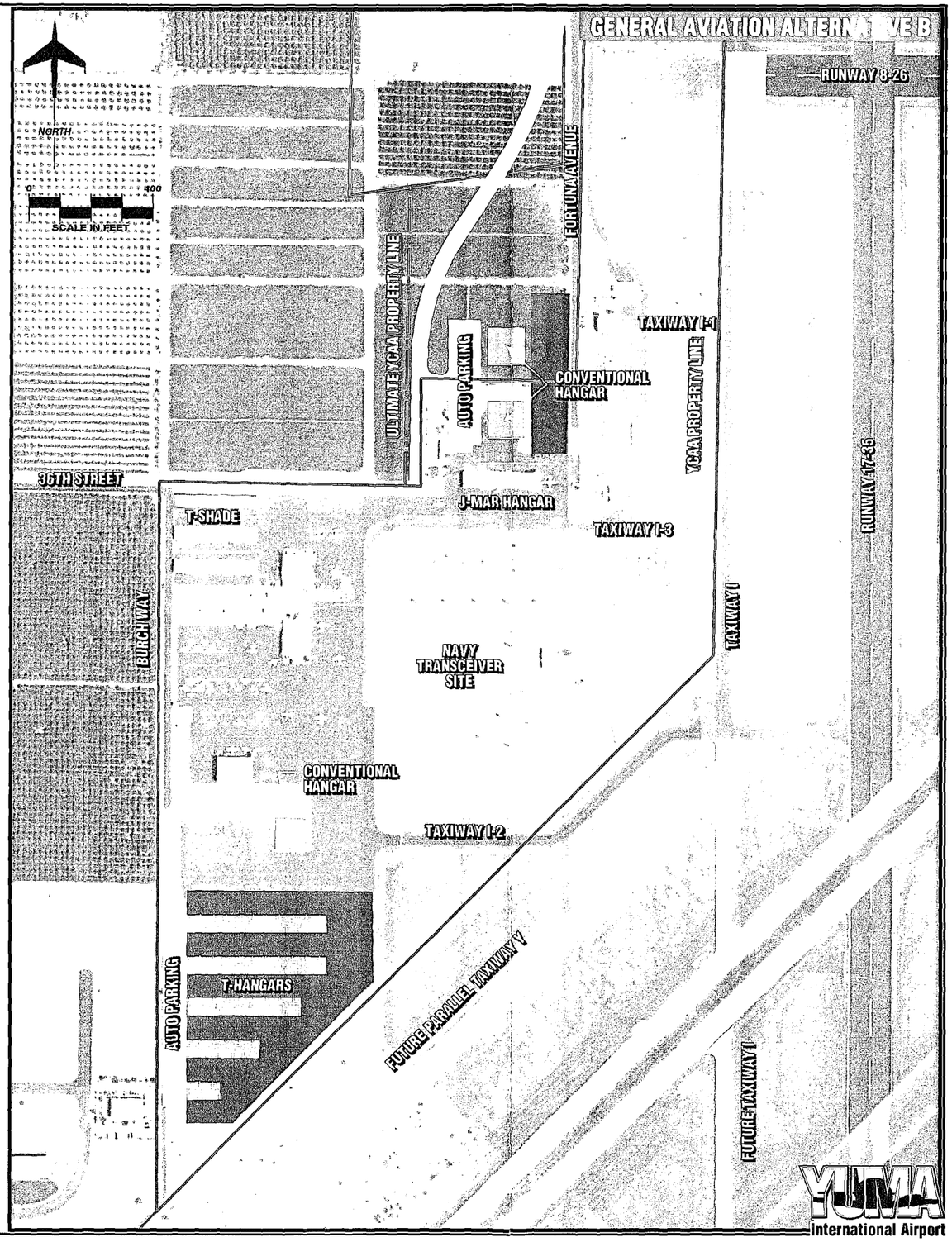
GENERAL AVIATION ALTERNATIVE A



GENERAL AVIATION ALTERNATIVE B



YUMA International Airport

Exhibit 4F

GENERAL AVIATION ALTERNATIVES

of large conventional hangars and access to the J-Mar hangar facility.

Both alternatives preserve the ability to develop existing areas available for conventional hangar and shade hangar development. Alternative B provides the ability to develop T-hangars without acquiring additional property, which would be required in Alternative A.

Consistent with previous planning efforts, both alternatives include the purchase of the J-Mar hangar facility by the YCAA. The J-Mar hangar facility is located off airport property and has been granted "through-the-fence" access to Yuma International Airport. The purchase of this hangar facility by the YCAA would eliminate the potential security and liability problems associated with this type of access to a public airport from private property located adjacent to the airport.

RECOMMENDED GENERAL AVIATION ALTERNATIVE

The recommended general aviation alternative, depicted on **Exhibit 4G**, incorporates portions of each alternative discussed above. T-hangar development is recommended south of the existing apron (as shown in Alternative A) to accommodate short-term T-hangar demand on existing YCAA property. The purchase of approximately 21-acres of land north of the west general aviation apron is recommended to accommodate long term T-hangar and conventional hangar demand.

PROPERTY CONSIDERATIONS

As illustrated in the previous discussions, much of the existing YCAA property is expected to be developed over the planning period to accommodate expected aviation growth. In fact, additional property acquisitions will likely be needed to accommodate general aviation growth. The purpose of this section is identify land areas adjacent to existing YCAA property that should be considered for acquisition to accommodate aviation growth at Yuma International Airport well beyond the planning period of this Master Plan, and review land use management techniques which can ensure long term land use compatibility.

PROPERTY ACQUISITIONS

The primary land acquisition consideration is securing property for future civilian landside development It is difficult to determine the amount of land required to accommodate aviation activities at the airport beyond the planning period of this Master Plan. However, as discussed above, additional land area may be required to accommodate projected general aviation needs through the planning period. The existing terminal area has existing constraints which prevent the area from expanding much beyond the service level of the new terminal building. While the existing area reserved for air cargo development appears sufficient for the planning period, consideration

should be given to providing additional area for long term air cargo development. Additionally, the expansion of support facilities, such as airport maintenance and fuel storage, should be considered in an analysis of long term property needs.

Shown in yellow on **Exhibit 4H** are land areas along the west side of the airport which can be considered for acquisition to accommodate long term facility development. Existing land uses and the location of existing roadways and planned roadway improvements were considered in defining the general limits of areas considered for acquisition to accommodate long term growth.

As shown on the aerial photographs, much of these areas shown for acquisition are currently undeveloped. The area shown for acquisition totals approximately 610 acres.

LAND USE MANAGEMENT TECHNIQUES

An important component of overall long-term airport planning is compatible land uses near the airport. It is economially infeasible to purchase sufficient property to provide an effective "buffer" between the airport and surrounding land uses. Therefore, it is important that the YCAA pursue compatible land uses near the airport. The YCAA should keep abreast of land use near the airport and encourage land use compatibility in City and County planning.

A number of land use management techniques are available to the local community and YCAA to ensure long term land use compatibility with the airport. These include policy and regulatory techniques which guide future development and expenditure techniques which involve payments for mitigation assistance.

POLICY TECHNIQUES

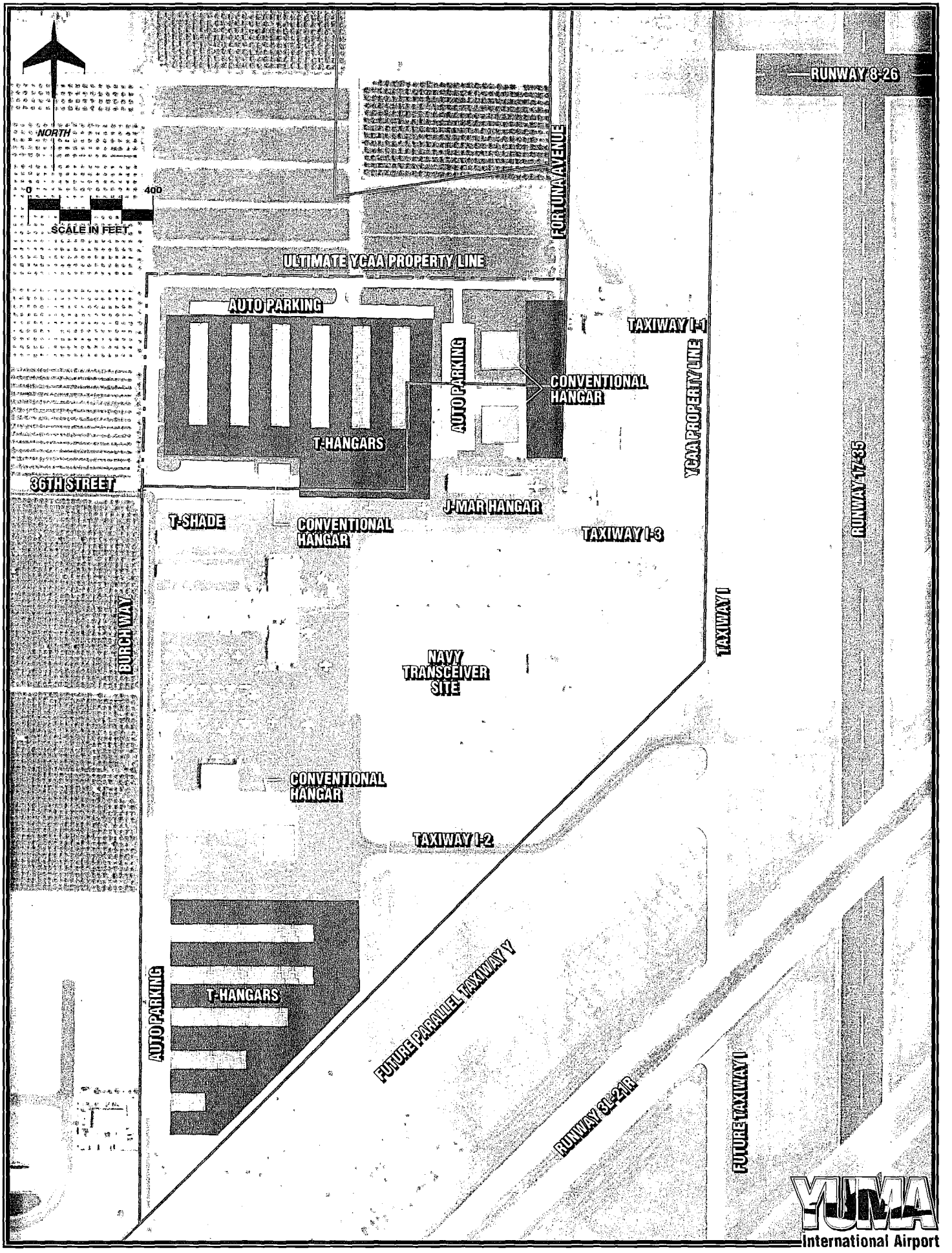
Non-regulatory land use policy techniques include:

- general (or comprehensive) planning;
- capital improvement programming; and
- project review guidelines.

General Planning

A community's general plan, or comprehensive plan, establishes policies for the growth and improvement of the community. With respect to a public airport, the general purposes of a community's general plan should be (1) to support the efficient operation of the airport, (2) to identify environmentally sensitive lands so as to guide development away from those areas which could be adversely affected by airport operations, and (3) to encourage new development designed in harmony with the airport and surrounding area.

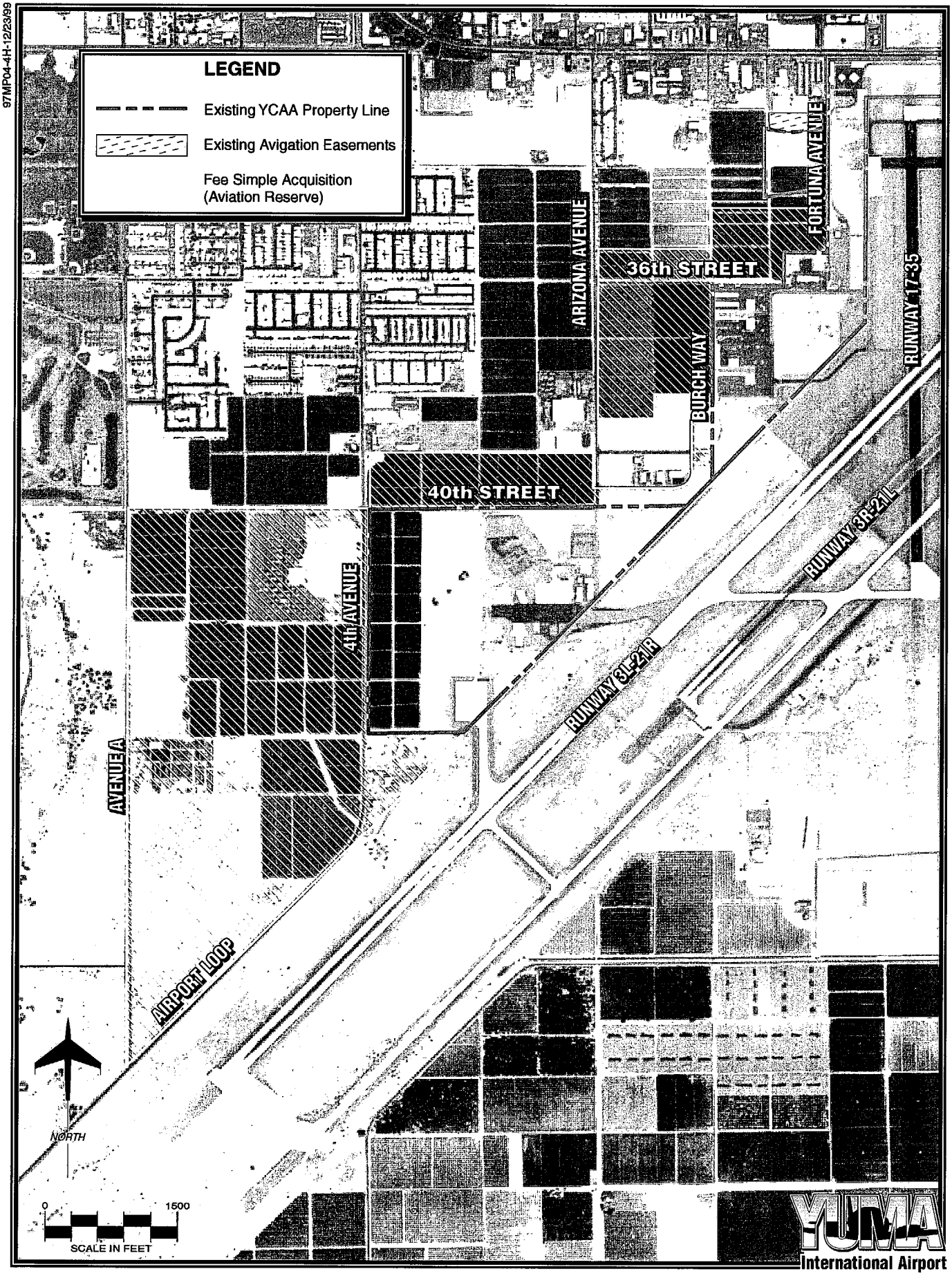
A general plan expresses a community's vision of the future and guides land use decision making. Typically, the general plan is the guide under which properties are zoned and developed. As a community grows or changes, the general plan must be periodically reexamined. A general plan provides an



YUMA International Airport

Exhibit 4G
RECOMMENDED GENERAL AVIATION ALTERNATIVE

97MP04-4H-12/23/99



YUMA
International Airport

Exhibit 4H
PROPERTY CONSIDERATIONS

understanding of the community's goals for only a brief period; these goals will change as land is developed and as the population increases, declines, or ages.

To be effective, general plans should be periodically updated. As communities initiate this process, consideration should be given to what is happening outside their jurisdictional boundaries. Sometimes neighboring communities do not feel it is necessary for them to "support the efficient operation of an airport," as suggested above; however, these communities can benefit from their proximity to an airport. In addition, neighboring communities have a responsibility to protect the interests of their existing and future residents. This includes protecting them from adverse noise impacts which can be avoided or mitigated.

On September 12, 1996, both the City of Yuma and County of Yuma adopted a Joint Land Use Plan for both incorporated and unincorporated portions of the City of Yuma and County of Yuma. Both the City of Yuma and County of Yuma General Plans have been amended to include the Joint Land Use Plan. The Joint Land Use Plan provides a "blueprint" for development and identifies the general location, types, and intensities of land use activities in the Joint Land Use Plan area. The Joint Land Use Plan, as adopted by both the City of Yuma and County of Yuma, is depicted on **Exhibit 4J**.

A portion of the Joint Land Use Plan addressed compatibility with the Marine Corps Air Station (MCAS) and Yuma International Airport. This included defining land uses near the airport and Runway Approach Departure Safety Area (RADSA)/ Airport Industrial Overly Districts (AIOD) at each end of Runway 8-26. The RADSA's and AIOD's identify appropriate land uses and development standards and the height of objects for these areas which are subject to the overflight of aircraft. While identified as a general policy in the plan, the RADSA's and AIOD's for Runway 8-26 has not been enacted into City or County regulations. Both the City and County of Yuma should consider updating the Joint Land Use Plan when an Air Installation Compatible Use Zones (AICUZ) study is completed by the MCAS-Yuma. The current AICUZ study was prepared in 1979.

Capital Improvements Programming

The capital improvements program (CIP) provides the governing body a means of control to direct community growth by effectively planning the location of capital improvements, especially roads and utility systems (e.g., water and sewer lines). The CIP can be an effective way to encourage the implementation of the land use policies of the general plan. For example, the provision of facilities large enough to serve business and industry can help encourage industrial development where desired. In contrast, the withholding of sewer and water facilities from an area can discourage any development from occurring there. Effective use of the CIP results in overall land development consistent with local policies, plans, and funding considerations.

Project Review Guidelines

This involves the adoption of guidelines to ensure that compatibility issues are considered by planning boards and local governing bodies during the review of development proposals. Planning commissions, zoning boards of adjustment, and local governing bodies are often required to use their own discretion and judgement in making recommendations and decisions on community development issues such as rezoning, subdivision applications, conditional use and variance applications, and proposed public improvement projects. It can be helpful to establish guidelines and procedures ensuring the consideration of compatibility issues in the review of these development proposals.

The general plan can be used to establish criteria for reviewing development proposals to ensure that overall goals and policies of the plans are maintained, while still allowing for a certain amount of flexibility to respond to changing circumstances. Review procedures could be included in the general plan requiring the consideration of the impacts of aircraft noise and overflights on development proposals. By maintaining an awareness of this factor, the boards and commissions can help to avoid or reduce compatibility problems. For example, areas of high aircraft noise tend to be located off the ends of a runway alignment. It is preferable to place amenities which would be likely to attract industrial and commercial development to these areas, as opposed to residential uses. If residential development is inevitable in those areas, then schools and detached single-family dwellings should be located out of the higher noise corridor, with linear parks and neighborhood commercial uses encouraged in the middle of the corridor.

REGULATORY TECHNIQUES

Regulatory techniques are land use and development controls established through local legislation. They include the following:

- compatible use zoning;
- zoning changes in residential density;
- airport compatibility overlay zoning;
- subdivision regulations;
- transfer of development rights; and
- fair disclosure regulations.

Compatible Use Zoning

The most common technique in compatibility planning is compatible use zoning (e.g., commercial, industrial, agricultural, or open space). In some zoning ordinances, residential and other noise-sensitive uses are permitted in commercial and industrial districts. Several noise-sensitive institutional uses, including day care centers, hospitals, nursing homes, assembly halls and auditoriums, are permitted in some commercial and industrial zoning districts. Thus, the mere presence of commercial or industrial zoning cannot guarantee that all incompatible uses will be avoided.

A potential limitation of compatible use zoning is the need to balance the supply of industrial and commercial-zoned land with demand. If the market for commercial or industrial land is weak, and if the property owners perceive that they are unable to develop or use their land, they can exert political pressure or, in extreme cases, sue in court to force rezoning of their land. This could occur if the total supply of commercial and industrial land vastly exceeds demand, or if the land which has been zoned for commercial and industrial use is not suited for that use because of site problems, such as poor access or inadequate water and sewer service.

In making rezoning decisions, the impact of the proposed zoning on the neighboring area must also be recognized. Problems can occur where the vacant land being considered for commercial or industrial zoning is near an established residential area. The residents may strongly object to the intrusion of non-residential uses into their neighborhood.

Zoning Changes - Residential Density

Another way of using conventional zoning to promote land use compatibility is to reduce the potential number of future residents in areas near the airport rather than preventing residential development altogether. This can be done by reducing the permitted housing densities in the noise-impacted areas. Because this is a second-best approach, it should be considered only where compatible use zoning is not feasible.

Large-lot zoning, generally requiring minimum lots sizes of one acre or more, is sometimes used as a "holding zone" in areas that are not considered ready for development. This zoning is intended to keep development at a minimum until such time as public facilities to support quality development are in place.

Airport Compatibility Overlay Zoning

Overlay zoning is an increasingly common zoning technique. It is intended to provide a layer of special purpose regulations to address special environmental constraints or problems, setting performance standards to protect the public. Overlay zoning involves the creation of one or more special zoning districts, supplementing the regulations of the general purpose zoning districts.

Airport compatibility overlay zoning is used around many airports in the country to establish land use controls to protect the public's health, safety and welfare from conflicts which may arise between aviation and urban development. For example, these controls are often used to regulate the height of structures within runway approach areas and in other areas near an airport. They are also used to promote development which is compatible with aircraft noise levels. By its establishment, the underlying zoning is supplemented by the requirements of the overlay zone. In other words, the

land within the overlay zone is subject to the requirements of two zoning districts; the strictest requirements of the combined zones apply to the affected property. This is similar to what occurs with floodplain zoning, only relating to airport noise.

Airport compatibility overlay zoning is intended to avoid the problems associated with incompatible development in high noise areas and areas subject to frequent, low overflights. Regulations in the overlay zones can prohibit noise-sensitive uses, as long as the underlying zone permits enough other land uses to provide an opportunity for the economically viable use of the land. The regulations also can require sound insulation in the construction of noise-sensitive uses.

The boundaries of airport overlay zones are usually based on the critical noise contours and airport overflight areas. The boundary may follow the actual contours, or, for the sake of simplified administration, nearby streets, property lines, or natural features.

Among the advantages of airport compatibility overlay zoning are the simplicity of the required amendments, the simplicity of administration, the clear relationship of the regulations to their purpose, and the minimum impact of the overlay regulations on the application of the zoning ordinance in other parts of the community.

Title 15, Chapter 154 of the Yuma Code of Ordinances details the Yuma Airport Zoning District. Chapter 154-360 states the purpose of the Airport District as follows: "The purpose of the Yuma Airport District is to promote the public health, safety and general welfare in the vicinity of the Marine Corps Air Station and the Yuma International Airport by minimizing exposure to high noise levels and accident hazards generated by airport operations and to encourage future development which is compatible with the continued operation of the airport." The Airport District zoning ordinance utilizes maps prepared by the City of Yuma (following Federal Aviation Administration and Department of Defense guidelines) to establishing noise exposure areas, accident potential areas and approach clearance areas. Utilizing these maps, the ordinance defines specific land uses based upon noise exposure, accident potential and height clearances for areas near the airport.

Subdivision Regulations

Subdivision regulations control the platting of land by setting standards for site planning, lot layout and the design of utilities and public improvements. They can encourage compatible development around an airport by requiring the consideration of aircraft noise during the plat review by public officials.

Subdivision regulations also can be used to inform prospective property owners of the risk of aircraft noise. In some communities, noise levels are shown on the final subdivision plats either by drawing the noise contours on the plats or by assigning noise levels to the lots. This makes the noise information a matter of public record. An important disadvantage is that, while the plat is

recorded and on file forever, noise levels can change.

Another approach is to write a note on the plat, or record a covenant with the plat, stating that the property is subject to aircraft noise and overflights and advising consultation with local planning officials and the airport proprietor to get current information about airport operations. As a practical matter, however, buyers of property rarely look at the plats.

Transfer Of Development Rights

Land ownership actually includes a number of rights to the use of that land, including rights of access, mineral rights, limited rights to the airspace above the land, and rights to develop the land. Transfer of development rights (TDR) is based on the idea that each right has a market value which can be separated and sold without selling the entire property.

TDR was developed as a way to preserve environmentally important areas without having to buy them with public funds. The technique begins by dividing the municipality into sending and receiving zones. The sending zones are areas where environmental preservation and minimal development are desired, and the receiving zones are areas where additional development is desired. Development rights, measured in terms of development density, are assigned through the zoning ordinance. If developers in the receiving areas can get additional development rights, they are allowed to build to higher densities than normally allowed by the zoning ordinance. They would buy these rights from landowners in the sending zones. In this way, the public can benefit from preserving environmentally valuable land, the owner of that land can be paid for preserving it, and developers can reap higher profits.

Based on experience with these programs around the country, several conditions for the successful use of TDR have been identified. The receiving districts must be capable of immediate development, the regulatory process must have integrity and be trusted by developers, the regulatory agency must be able to inform and help property owners and developers, and programs must be as simple as possible and facilitate the self-interest of all involved parties.

A variation of TDR is density transfer zoning. This allows the developer of several large tracts of land to move the allotted densities among the tracts to reduce densities in areas worthy of preservation. This differs from TDR because only one owner is involved in the transfer, and a system for sale and purchase of development rights is not required. Density transfer zoning often can be achieved through creative use of the planned unit development process. In rapidly growing areas with large amounts of vacant land, TDR can be an effective tool for airport land use compatibility planning. At no cost to the taxpayers, it can neatly deal with the problem of what to do with land in high noise zones when there are no practical alternatives to residential development.

Fair Disclosure Regulations

Fair disclosure regulations are intended to ensure that prospective buyers of property are informed that the property is or will be exposed to aircraft noise and overflights. It is not uncommon around even major airports for newcomers to report having bought property without having been informed about the airport.

At the most formal level, fair disclosure can be implemented through regulations requiring the seller or his agent to provide a notice of aircraft noise exposure on the real estate listing sheet and at the time that a sales contract is executed. At its most informal level, it can involve a simple program of information distribution by the airport management.

In the 1997, the State of Arizona enacted legislation which gives local communities the ability to establish Airport Influence Areas to aid in notifying owners and potential purchasers of property that they are in area that is subject to aircraft noise and overflight. The AIA legislation gives the local communities discretion in establishing which property to include in the AIA. The local community is required to give notice and hold hearings on an AIA proposal. Once an AIA is established and after public notice and hearings, the Airport Influence Area is recorded with the County Recorder.

EXPENDITURE TECHNIQUES

Land use management expenditure strategies include:

- property acquisition;
- development rights acquisition;
- noise and avigation easement purchase;
- purchase assurance;
- sales assistance; and
- sound insulation of noise-sensitive buildings.

Property Acquisition

Fee simple purchase, or acquisition, of land is one method of ensuring compatibility around an airport. It is the simplest and most complete way to ensure compatibility around an airport. The obvious drawback is its high cost. The primary intent of land acquisition is to prevent incompatible uses from being developed near the airport. If necessary, land parcels can be purchased, consolidated and resold or leased for commercial and industrial redevelopment compatible with the airport.

Development Rights Acquisition

The ownership of land involves the ownership of a bundle of rights to the use of that land, to the extent permitted by government regulations such as zoning regulations, health and safety laws, and environmental laws. A property owner can sell some of these rights while still retaining title. Selling these rights prevents land from being developed. For example, property owners surrender some of the rights to their property when they grant someone an easement or sell the mineral rights to the property.

The purchase of development rights is appropriate when there is insufficient legal justification to use zoning to prevent incompatible uses or where there is strong local opposition to the use of zoning. Development rights purchase also can be an alternative to fee simple acquisition. This is especially appropriate where the land is undeveloped or being farmed or used for private recreation.

The extent of the acquired development rights can vary depending on the situation. The property owner would retain the right to develop the property for commercial and industrial use as well as low-intensity uses such as parks, recreation, agriculture, grazing, and forestry. In other cases, it may be appropriate to acquire the rights for commercial and industrial development as well as noise-sensitive development.

The advantage of purchasing development rights is that complete protection from incompatible development can be assured, and the property owners can receive compensation for any perceived loss. In addition, the property can be kept in private ownership, in productive use, and on the tax rolls while protecting the airport from incompatible development. The main disadvantage is the potentially high cost of the development rights, in return for which the buyer receives only a very limited interest in the property.

Acquisition Of Noise And Avigation Easements

An avigation easement gives the owner of the easement the right to fly aircraft over the property.

Noise and avigation easements give the airport the right to direct aircraft over the homes or property, creating related annoyances, without the threat of a lawsuit. The easements would run with the land and would serve as a limited means of notifying prospective property owners of the impact of airport noise.

LAND USE COMPATIBILITY CONCLUSIONS

The City of Yuma and County of Yuma have taken an initial step, with the approval of the Joint Land Use Plan, in defining general community policy with regard to land use compatibility with Yuma International Airport and the Marine Corps Air Station. Some portions of the Joint Land Use Plan, specifically the implementation of the RADSA and AIOD, have yet to be implemented.

A number of options have been discussed which offer the possibility of strengthening land use compatibility near the airport. The need to pursue land use compatibility through regulatory means will depend upon

development pressures near the airport and the extent that local planning and zoning follow the general policies set forth in the Joint Land Use Plan. The YCAA should view purchasing land, easements, or development rights as a last resort in ensuring land use compatibility near the airport.

SUMMARY

A recommended master plan concept will be developed after the alternatives are reviewed by the Planning Advisory Committee and YCAA staff. Once the recommended master plan concept has been identified, a development schedule will be prepared, and potential funding sources for recommended projects will be identified (including those projects that are eligible for federal or state funding assistance). The remaining chapters of the master plan will be used to refine a final concept through the development of detailed layouts and a phased construction program.